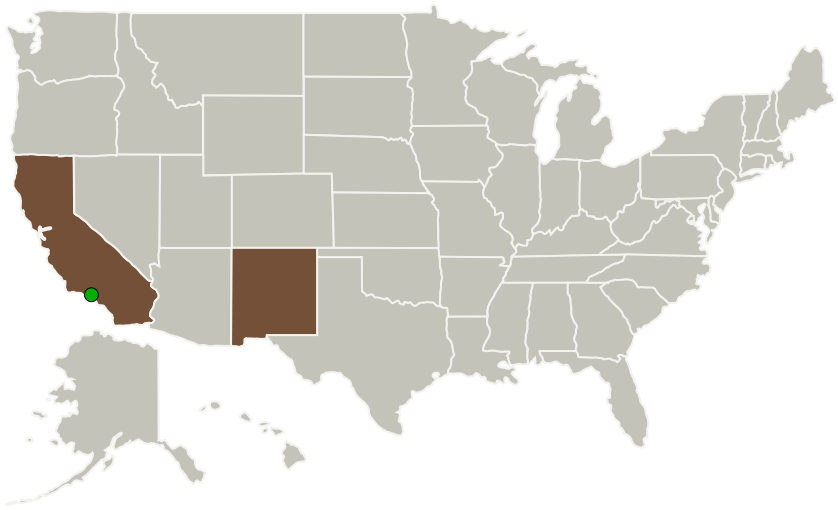
QMU in Integrated Spacecraft System Models, Phase I

Completed Technology Project (2010 - 2011)

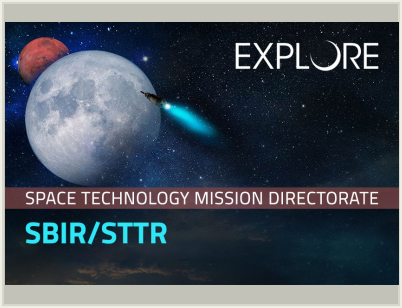
Project Introduction

ACTA and Sandia National Laboratories propose to quantify and propagate substructure modeling uncertainty for reduced-order substructure models to higher levels of system assembly, thereby enabling predictive simulations of engineering designs with quantified margins and uncertainties for model-based flight qualification of complete spacecraft. A critical part of this process is the accurate modeling of interface structures, especially nonlinear interface structures that connect major substructures, and the quantification of their uncertainties. By developing generic uncertainty models for reduced order models of specific substructures, NASA will be able to quantify margins and uncertainties for structural systems outside the domain of model validation tests.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
ACTA, Inc.	Lead Organization	Industry	Torrance, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
Sandia National Laboratories(SNL)	Supporting Organization	R&D Center	Albuquerque, New Mexico



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Primary U.S. Work Locations	
California	New Mexico

Project Transitions

January 2010: Project Start

January 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140143)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

ACTA, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Timothy K Hasselman

Co-Investigator:

Timothy Hasselman

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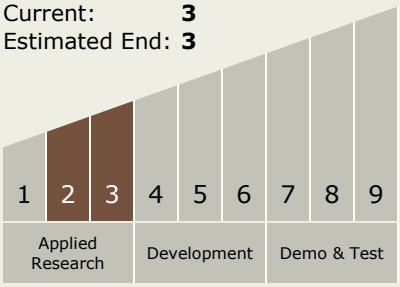
Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.5 Modeling and Simulation for EDL

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System